

Radio Navigation Waveform Experiment, Phase I

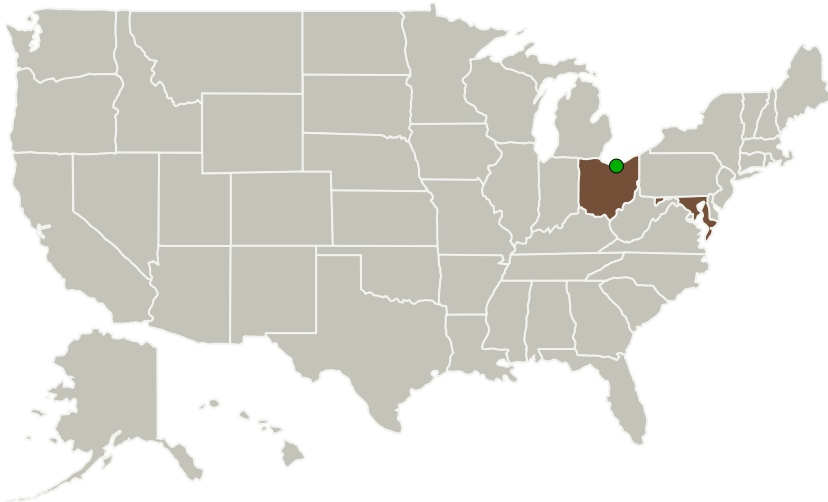
Completed Technology Project (2012 - 2012)



Project Introduction

NASA is installing the Communications, Navigation, and Networking reConfigurable Testbed (CoNNeCT) onto the truss of the International Space Station to demonstrate software-defined radio (SDR) technology, and is now accepting proposals for new and useful SDR experiments to fly on CoNNeCT that are compliant with the Space Telecommunications Radio System (STRS) SDR standard. Emergent Space Technologies proposes to develop an STRS-compliant software-defined GPS receiver that can be flown on CoNNeCT that is based on a proven terrestrial commercial technology which shares heritage with the JPL Blackjack receiver. The proposed system is called the Radio Navigation Waveform Experiment (RANE) and utilizes a codeless signal processing technique, called Spectral Compression Positioning (SCP), to estimate position, navigation, and timing (PNT) solutions. RANE will have a small electronic footprint, be multi-frequency capable, and require less power than traditional code-correlator GPS receivers. On CoNNeCT, RANE will demonstrate the portability and use of SCP for PNT solutions for NASA.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Emergent Space Technologies, Inc.	Lead Organization	Industry	Greenbelt, Maryland
● Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
Maryland	Ohio

Project Transitions

**February 2012:** Project Start**August 2012:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/138444>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Emergent Space Technologies, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Kenn L Gold

Co-Investigator:

Kenn Gold

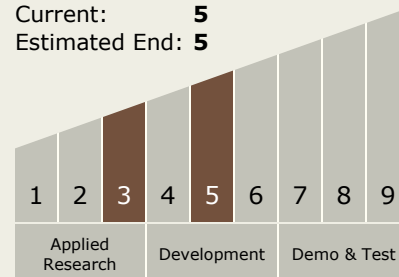
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Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
 - └ TX11.4 Information Processing
 - └ TX11.4.4 Collaborative Science and Engineering

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System